CLAIMS

What I claim is:

1. An immunogenic composition for *in vivo* administration to a host for the generation in the host of a protective immune response to a major outer membrane protein (MOMP) of a strain of *Chlamydia*, comprising a non-replicating vector comprising:

a nucleotide sequence encoding a MOMP or MOMP fragment that generates a MOMP-specific immune response, and

a promoter sequence operatively coupled to said nucleotide sequence for expression of said MOMP or MOMP fragment in the host; and

a pharmaceutically-acceptable carrier therefor.

2. The composition of claim 1 wherein said nucleotide sequence encodes a full-length MOMP.

3. The immunogenic composition of claim 1 wherein said nucleotide sequence encodes an N-terminal fragment of the MOMP of approximately half the size of full-length MOMP.

4. The immunogenic composition of claim 1 wherein said nucleotide sequence encodes a region comprising at least one of the conserved domains 2, 3 and 5 of a major outer membrane protein of a strain of *Chlamydia*.

5. The immunogenic composition of claim 4 wherein said nucleotide sequence encoding the conserved domain 2 and/or 3 further includes a nucleotide sequence encoding a variable domain of the major outer membrane protein immediately downstream of said conserved domain.

6. The immunogenic composition of claim 4 wherein said nucleotide sequence encodes the conserved domain 5 of a major outer membrane protein of a strain of *Chlamydia*.

7. The immunogenic composition of claim 1 wherein said promoter sequence is the cytomegalovirus promoter.

8. The immunogenic composition of claim 1 wherein said strain of *Chlamydia* is a strain producing chlamydial infections of the lung.

9. The immunogenic of claim 1 wherein said strain of *Chlamydia* is a strain of *Chlamydia trachomatis*.

10. The immunogenic composition of claim 9 wherein said non-replicating vector comprises plasmid pcDNA3 containing said promoter sequence and into which said nucleotide sequence is inserted in operative relation to said promoter sequence.

11. The composition of claim 1 wherein said immune response is predominantly a cellular immune response.

12. The composition of claim 1 wherein said nucleotide sequence encodes a MOMP which stimulates a recall immune response following exposure to wild-type *Chlamydia*.

13. A method of immunizing a host against disease caused by infection with a strain of *Chlamydia*, which comprises administering to said host an effective amount of a non-replicating vector comprising:

a nucleotide sequence encoding a major outer membrane protein (MOMP) of a strain of *Chlamydia* or a MOMP fragment that generates a MOMP-specific immune response, and

a promoter sequence operatively coupled to said nucleotide sequence for expression of said MOMP in the host.

14. The method of claim 13 wherein said nucleotide sequence encodes a full-length MOMP.

15. The method of claim 13 wherein said nucleotide sequence encodes an N-terminal fragment of the MOMP of approximately half the size of full-length MOMP.

16. The method of claim 13 wherein said nucleotide sequence encodes a region comprising at least one of the conserved domains 2, 3 and 5 of a major outer membrane protein of a strain of *Chlamydia*.

17. The method of claim 16 wherein said nucleotide sequence encoding the conserved domain 2 and/or 3 further includes a nucleotide sequence encoding a variable domain of the major outer membrane protein immediately downstream of said conserved domain.

18. The method of claim 16 wherein said nucleotide sequence encodes the conserved domain 5 of a major outer membrane protein of a strain of *Chlamydia*.

19. The method of claim 13 wherein said promoter sequence is the cytomegalovirus promoter.

20. The method of claim 13 wherein said strain of *Chlamydia* is a strain producing chlamydial infections of the lung.

21. The method of claim 13 wherein said strain of *Chlamydia* is a strain of *Chlamydia trachomatis*.

22. The method of claim 13 wherein said non-replicating vector comprises plasmid pcDNA3 containing said promoter into which said nucleotide sequence is inserted in operative relation to said promoter sequence.

23. The method of claim 13 wherein said immune response is predominantly a cellular immune response.

24. The method of claim 13 wherein said nucleotide sequence encodes a MOMP which stimulates a recall immune response following exposure to wild-type *Chlamydia*.

25. The method of claim 13 wherein said non-replicating vector is administered intranasally.

26. The method of claim 13 wherein said host is a human host.

27. A method of using a gene encoding a major outer membrane protein (MOMP) of a strain of *Chlamydia* or MOMP fragment that generates a MOMP-specific immune response, to produce an immune response in a host, which comprises:

isolating said gene,

operatively linking said gene to at least one control sequence to produce a non-replicating vector, said control

sequence directing expression of said MOMP or MOMP fragmentwhen introduced into a host to produce an immune response to said MOMP or MOMP fragment, and

introducing said vector into a host.

28. The method of claim 27 wherein said gene encoding MOMP encodes a full length MOMP.

29. The method of claim 27 wherein said gene encoding MOMP encodes an N-terminal fragment of the MOMP of approximately half the size of full-length MOMP.

30. The immunogenic composition of claim 27 wherein said nucleotide sequence encodes a region comprising at least one of the conserved domains 2, 3 and 5 of a major outer membrane protein of a strain of *Chlamydia*.

31. The immunogenic composition of claim 30 wherein said nucleotide sequence encoding the conserved domain 2 and/or 3 further includes a nucleotide sequence encoding a variable domain of the major outer membrane protein immediately downstream of said conserved domain.

32. The immunogenic composition of claim 30 wherein said nucleotide sequence encodes the conserved domain 5 of a major outer membrane protein of a strain of *Chlamydia*.

33. The method of claim 27 wherein said control sequence is the cytomegalovirus promoter.

34. The method of claim 27 wherein said strain of *Chlamydia* is a strain producing chlamydial infections of the lung.

35. The method of claim 27 wherein said strain of *Chlamydia* is a strain of *Chlamydia trachomatis*.

36. The method of claim 27 wherein said non-replicating vector comprises plasmid pcDNA3 containing said control sequence into which said gene encoding MOMP is inserted in operative relation to said control sequence.

37. The method of claim 27 wherein said immune response is predominantly a cellular immune response.

38. The method of claim 21 wherein said gene encodes a MOMP which stimulates a recall immune response following exposure to wild-type *Chlamydia*.

39. The method of claim 27 wherein said vector is introduced into said host intranasally.

40. The method of claim 27 wherein said host is a human host.

41. A method of producing a vaccine for protection of a host against disease caused by infection with a strain of *Chlamydia*, which comprises:

isolating a nucleotide sequence encoding a major outer membrane protein (MOMP) of a strain of *Chlamydia* or a MOMP fragment that generates a MOMP-specific immune response,

operatively linking said nucleotide sequence to at least one control sequence to produce a non-replicating vector, the control sequence directing expression of said MOMP or MOMP fragment when introduced to a host to produce an immune response to said MOMP or MOMP fragment, and

formulating said vector as a vaccine for *in vivo* administration to a host.

42. A vaccine produced by the method of claim 41.

43. A non-replicating vector, comprising:

a nucleotide sequence encoding a region comprising at least one of the conserved domains 2, 3 and 5 of a major outer membrane protein of a strain of *Chlamydia*, and

a promoter sequence operatively coupled to said nucleotide sequence for expression of said at least one conserved domain in a host.

44. The vector of claim 43 wherein said nucleotide sequence encoding the conserved domain 2 and/or 3 further includes a nucleotide sequence encoding a variable domain of the major outer membrane protein immediately downstream of the conserved domain.

45. The vector of claim 43 wherein said nucleotide sequence encodes the conserved domain 5 of the outer membrane protein.

46. The vector of claim 43 wherein said promoter sequence is the cytomegalovirus promoter.

47. The vector of claim 43 wherein said non-replicating vector comprises plasmid pcDNA3 containing said promoter sequence and into wherein said nucleotide sequence is inserted in operative position to said promoter sequence.

48. The vector of claim 47 wherein said strain of *Chlamydia* is a strain producing chlamydial infectious of the lung.

49. The vector of claim 47 wherein said strain of *Chlamydia* is a strain of *Chlamydia trachomatis*.